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ABSTRACT

This study was conducted to examine one suburban San Diego (California) school's attempt, under a restructuring plan, to correct resegregation in classroom assignments. A program was developed which combined gifted, regular education, and bilingual students (n=79) in grades three and four with three teachers in a team-teaching approach. Students were redeployed for reading and mathematics based on skill level, but were heterogeneously grouped for other subjects. Research literature suggests that students in such a program should receive the double benefit of working at a level of success while engaging in cooperative learning activities with other students of varying ability; the success of such restructuring efforts is often dependent on teacher and student attitudes toward change. The focus of this paper is on the interaction between teacher efficacy and student attitudes during implementation of a locally designed, cooperative learning strategy aimed at improving learning for all students. Students were assessed three times over a school year for reading scores using the Durrell-Sullivan Reading Test. Teachers were given Gibson and Dembo's Teacher Efficacy Survey. The findings show that student self-esteem is the only significant predictor for reading outcomes. All three groups of students showed Pareto improvement gains in reading skills, and limited-English-proficient students showed significantly greater learning. (LL)

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Empowering Teachers and Students in a Restructuring School: A Teacher Efficacy Interaction Model and the Effect on Reading Outcomes

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Abstract

This paper examines one school's attempt, under a restructuring plan, to correct resegregation in classroom assignments to third and fourth grade students. A program was developed which combined gifted, regular education, and bilingual students under three teachers in a team-teaching approach. Students were redeployed for reading and mathematics based on skill level and heterogeneously combined for all other curriculum.

Research literature suggests that students in such a program should receive the double benefit of working at a level of success while engaging in cooperative learning activities with other students of varying ability, and the success of such restructuring efforts is often dependent on teacher and student attitudes toward change. The focus of this paper is on the interaction between teacher efficacy and student attitudes while implementing a locally designed, cooperative learning strategy aimed at improving learning for all students.

The three research questions addressed by this paper are:

(1) What are student attitudes toward school, and specifically, the reintegration program?

(2) How does the teachers' sense of efficacy effect the students' attitudes? and

(3) What is the effect of student and teacher attitudes on reading achievement?

Students were surveyed and a factor analysis yielded ten constructs (eight of which had alpha reliability values > .70). Students were assessed three times over a school year for reading scores using the Durrell-Sullivan Reading Test, and pre/post CTBS reading scores were analyzed. Teachers were given Gibson and Dembo's(1984) Teacher Efficacy Survey.

A multi-regression, path model shows student self-esteem as the only significant predictor for reading outcomes (R^2=.08), and students' sense of citizenship, multicultural acceptance, and peer relationships, together with teachers' external efficacy, account for 69% of the variance in self-esteem (R^2=.69). All three groups of students (gifted, regular education, and bilingual) showed Pareto improvement gains of greater than one year in growth in reading skills on the Durrell-Sullivan, and Analysis of Co-Variance on pre/post CTBS reading showed significantly greater learning for LEP students ($F(2,47)=3.73$, p.= .032).

Schools are under increasing pressure to make dramatic change in the way they do business. Federal guidelines for effective schools outline five elements that should be present: strong leadership by the principal, high expectations for student achievement on the part of the teachers, an emphasis on basic skills, an orderly environment, and frequent, systematic evaluation of students. However, Steadman (1987) in a review of literature shows that the above formula cannot be substantiated. He concludes that:

> "the result of the effective schools movement may actually be a widening of the social class achievement gap, as many suburban schools move rapidly into high-tech, problem-solving curricula, while urban schools remain focused on lower-order test items." (p.217) "The typical school remains a white, middle-class institution whose language and worldview are alien to members of different cultures and classes. Historically, the indifference or outright hostility of the schools toward groups not part of the mainstream has contributed to their academic failure." (p. 219)

In his synthesis of the literature, he identified nine new broad categories: ethnic and racial pluralism, parent participation, shared governance with teachers and parents, academically rich programs, skilled use and training of teachers, personal attention to students, student responsibility for school affairs, an accepting and supportive environment, and teaching aimed at preventing academic problems.

Many districts are meeting these challenges through "restructuring": the process by which schools are given increased autonomy to develop programs that are grounded in research and most appropriate for their local needs. Restructuring efforts often employ a site-based planning committee made up of teachers, parents, administrative staff, and students in a shared governance format. Marsh & Jordan-Marsh (1985) found that as individuals move through the process of adopting a new innovation in their local setting, they are seen as moving through seven Stages of Concern: Awareness, Informational, Personal, Management, Consequence, Collaboration, and Refocusing. Their study focused on a problem that change facilitators report is paramount--addressing the personal concerns of practitioners. It is pointed out that the curriculum change literature has a relatively strong base of sociologically-oriented strategies when psychologically-oriented strategies are needed as a complement, especially for addressing personal concerns.

The psychological literature on decision making and efficacy has not been utilized to any great extent and offers real prospect for helping.

Ultimately, any improvement in learning must be brought about by teachers in the classroom. For this reason, the teacher's sense of efficacy and how it interacts with student attitudes is critical. A long term study by Stringfield & Teddlie (1988) that looked at elementary schools' variables--SES, perceptions of teachers, students, principals about school climate--found that in predicting achievement, 75 % of the variance is between students within classes, 12 % of the variance is between teachers within schools, and 13% of the variance is between schools. Both later effects show that schools and teachers strongly influence achievement. Additionally, student sense of current and future academic accomplishment and student sense of academic futility added the greatest non-SES variance to the prediction equation.

In another study by Berman & McLaughlin (1977), teacher's sense of efficacy was most important in implementing effective change.

This paper examines one school's attempt, under a restructuring plan, to correct student resegregation due to programmatic classroom assignment. A site-developed program was implemented which combined gifted, regular education, and bilingual students under three teachers in a team-teaching approach. Students were redeployed for reading and mathematics based on skill level and heterogeneously combined in small group, cooperative learning classrooms for all other curriculum.

The focus of this paper is the interaction between teacher efficacy and student attitudes while implementing a locally designed, cooperative learning strategy aimed at improving learning for all students.

Literature Review

Cooperative Learning

Kagan (1986) refers to cooperative learning as the structuring of classrooms so that students work together in small cooperative teams. Cooperative learning grew from earlier work by Bandura (1977) that suggested the dominant instructional strategy, the lecture or verbal persuasion is the least effective in changing behavior. Performance accomplishments are the most effective. Kagan's (1986) research suggests convincingly that cooperative learning techniques produce greater student academic achievement than conventional teaching methodologies. Beyond academic achievement, students who were initially prejudiced against one another evidenced greater interpersonal attraction in an experimental cooperative setting than did students in competitive and individualistic settings.

In another study by Glassman (1988) the effect of cooperative learning across ethnic groups was examined. Comparing students who were Black, Hispanic and Anglo revealed positive gains for Hispanic students in the cooperative learning group in the study. Especially in writing, significant advances were achieved for Hispanic students. A study of mixed-age groups by Foreman and Cazden (1985), found that if a child who understands a task works on it with a child who doesn't understand, the one will teach the other. But two conditions must be met. The teaching child must really understand, and the two children must exchange viewpoints.

Slavin (1988) makes the distinction between-class and within-class grouping. He makes the point that for within-class grouping a great deal of research is available on cooperative learning methods, which involve students in small, heterogeneous learning groups. If the groups are rewarded on the basis of the individual learning of all group members, then cooperative learning can consistently increase student achievement in the elementary grades. When looking at between class grouping, however, he concludes that wholesale between-class grouping plans, such as ability-grouped class assignment, special classes for the gifted, and self-contained special education, do not generally affect student achievement. Ability-grouping plans such as the Joplin Plan and certain forms of nongraded and regrouping plans <u>can</u> be instructionally effective. They all: 1) leave students in heterogeneous classes most of the school day, 2) regroup only for reading and/or mathematics, 3)

flexibly change student placements, 4) adapt level and pace of instruction to the needs of the group.

Teacher Efficacy

The literature on teacher efficacy grows out of Rotter's (1966) locus of control construct. Early studies brought Brophy & Evertson (1976, 1977) to conclude that the only belief which consistently separates high and low effective teachers is the extent to which teachers believed they make an important contribution to student learning. More specifically, Armor found greater teacher efficacy results in advanced reading achievement (Armor, et al, 1976).

A conceptual framework (Ashton,1983) for the study of teachers' sense of efficacy was used to determine the extent to which teachers believed they could influence student learning. Significant relationships among teacher efficacy, student-teacher interaction, and student achievement were found. Teachers with high efficacy attitudes tended to maintain high academic standards, concentrate on academic instruction, monitor students' on-task behavior, and develop a warm, supportive classroom environment, and their students had higher achievement test scores than did students of teachers with low efficacy attitudes. Current conditions in the school--isolation, uncertainty, powerlessness, and lack of economic rewards and social recognition--appeared to be factors that contribute to a low sense of efficacy in teachers. School organizational structures of teaming, multi-age grouping, and collegial decision-making among teachers appeared to be factors that may increase teacher efficacy.

Other multi-dimensional models of teacher efficacy were influenced by Bandura's (1977, 1978) conceptualization of self-efficacy. Gibson & Dembo (1984) looked at teacher efficacy as a variable accounting for individual differences in teaching effectiveness. They found two dimensions corresponding to Bandura's (1978) theoretical model of self efficacy: Personal Teaching Efficacy--the internal sense that the teacher has the ability to teach; and Teaching Efficacy--the external sense that children have the ability to learn. Later research using this model found teacher efficacy a critical variable in teacher and school effectiveness (Tracz & Gibson,1986). Personal teaching efficacy (level of confidence in personal teaching abilities) correlated positively with reading achievement and whole class instruction and negatively with small group instruction. Teaching efficacy (general expectation of

student success) correlated significantly with language and mathematics achievement. This study supports the contention that a teacher's sense of efficacy is significantly related to classroom grouping of students and to student achievement outcomes.

Guskey (1986) presents a model describing three context variables hypothesized to affect measures of teacher efficacy. These variables include the nature of the student performance outcome, the ability of the students involved, and the scope of the influence (single student or group). Additionally, Huston (1989) found teachers with greater teaching experience also had greater internal locus of control (efficacy).

Student/Teacher Interaction

One purpose of this paper is to explore the dynamics of student relationships with each other and teachers. How does teacher efficacy interact with student attitudes toward learning? Katz (1988) suggested that "curiosity and continuous interest are dispositions, or tendencies to respond to experiences in certain ways. Dispositions are learned mainly from being around people who have them, and they get strengthened if learners get ample opportunities to express them." (p. 14). While this is probably true, it leaves little in specific behaviors for teachers to model.

Parkerson et al (1984) developed five causal models through multiple regression, path analysis. The final complex model developed was unable to produce a goodness of fit, suggesting other models may better represent the interaction between the following constructs: Home, Time, Motivation, Peers, Quality of instruction, Social environment, Media. All constructs had low reliability alphas (< .65), which may have been part of the problem. Interconstruct correlations show the strongest relationships between Quality of instruction with Time and Motivation.

Research Design

This paper will look at student/teacher attitude interaction in resegregated classrooms. Cooperative Learning strategies together with mixed groupings similar to those suggested by Slavin (1988) were implemented at one school. Attitudes and outcomes were measured over the first year of implementation. Specifically, the three research questions are:

(1) What are student attitudes toward school, and specifically, the reintegration program?

(2) How does the teachers' sense of efficacy effect the students' attitudes? and

(3) What is the effect of student and teacher attitudes on reading achievement?

Subjects

Subjects in this study are 79 third and fourth grade students, and their three teachers. The school is located in a suburb of San Diego, and is part of the San Diego Unified School District. The students were in three groups: 32 students bussed to the school from an inner-city elementary school under a voluntary integration program (all of a non-white ethnicity); 29 resident students in a "regular education" program; and 18 identified gifted students. Previously, these students would have been predominantly assigned respectively to Bilingual, Multi-Subject, and Gifted certificated teachers. The teaching staff at this school, through the restructuring process, developed a cooperative learning, between-class grouping program to correct the isolation of students. Heavy emphasis was placed on high teacher expectations for positive student growth: the program was called Touching Our Potentials (TOPS).

Instruments

The Durrell-Sullivan Reading Test was delivered to the students in October, January, and April to monitor reading progress. Grade equivalent score data were added to a student data base.

A student survey was developed by the District's Evaluation Department and modified by the staff at the school. This survey was delivered to the students in April. A five point Likert response

measured student agreement to questions such as "I learned a lot in homeroom this year".

Gibson & Dembo's (1984) Teacher Efficacy instrument was delivered to the three teachers in late April.

CTBS reading scores for the previous and study years were converted to Normal Curve Equivalent (NCE) scores and added to the data set.

Analysis

Two datasets were developed: a student database and teacher variable database. Teacher variables were moved to the student file through the homeroom assignment.

To assess the first research question, what are student attitudes toward school and the reintegration program, a factor analysis was performed on the student survey. Reliability tests indicated eight factors with alpha values greater than .70. Scale scores were derived from F Score loadings and variables created in the the student database for each factor construct. Group means were then calculated for each construct.

In examining teacher efficacy and its effect on student attitudes, Personal Teaching Efficacy (internal) and Teaching Efficacy (external) scores were calculated using Gibson & Dembo's (1984) construct loadings. Teacher internal and external scores, along with years teaching experience were then included in the student database. The CTBS post-test was held as the dependent outcome in a multi-regression, path analysis to see which student attitudes are directly correlated with teacher variables.

Finally, assessment of reading score gains was performed by examining means for each group, under a "rate-of-learning" perspective, and Analysis of Co-Variance performed on CTBS tests.

Limitations

The number of teachers is only three in this study. Interpretation of any findings based on teacher variables is tentative at best. The Durrell-Sullivan Reading Test yields a grade point equivalent score that is not appropriate for some types of analysis due to its ordinal nature. Also, student attitude constructs derived from the student survey are not pre-post but measure only outcome attitudes. No comparison of between group differences in attitude is meaningful without a pre-measure to look at change.

Findings

Student Survey

The factor analysis identified ten factors, eight of which had Eigenvalues greater than 1.3. Table 1 provides reliability alphas (along with question items and F loadings) for each student attitude construct: peer relationships, positive attitude toward school, teacher support, high self-esteem, TOPS grouping, multicultural acceptance, TOPS social, low self-esteem, like school, and citizenship.

Insert Table 1 about here

Mean values for each construct, by group, are presented in Table 2. Groups were the voluntary integration bussed students (VEEP), regular education, and identified gifted (GATE) students.

Insert Table 2 about here

On most constructs, there was no significant difference in means. Comparison of means is marginally appropriate due to the ordinal scale compared, but was performed anyway to get a fix on where the students were high or low in relation to one another. Without a pre-measure, no inferences may be drawn regarding change of these attitudes.

Table 1

La Jolla Elementary Student Survey Factor Analysis

Factor	Eigenvalue	F Score	Question	Item Question	Construct	Reliability Alpha	Ranges Low	Mid	High
1	9.34	.264	13	The other students want me to come to class every day	**Peer**	.866	0.26	0.79	1.32
		.213	4	The other students want me to be a good student	**Relationships**		0.21	0.64	1.06
		.225	7	The other students in TOPS are very nice			0.22	0.67	1.12
		.158	19	The other students in TOPS want to help me do my best work			0.16	0.47	0.79
		.130	9	There are a lot of students in TOPS whom I like very much			0.13	0.39	0.65
		.134	2	I like most of the students in TOPS			0.13	0.4	0.67
		.143	6	Almost everyone in TOPS is friendly to me			0.14	0.43	0.71
		.156	17	Other students want to be my friend			0.16	0.47	0.78
		.093	10	I am an easy person to like			0.09	0.28	0.47
							0.17	0.51	0.84
2	3.08	.296	1	I like school	**Positive Attitude**	.864	0.3	0.89	1.48
		.290	3	School is a lot of fun	**toward School**		0.29	0.87	1.45
		.239	11	School is the place where I am happiest			0.24	0.72	1.2
		.240	8	School is the best part of my day			0.24	0.72	1.2
							0.27	0.8	1.33
3	2.26	.316	35	Teacher in TOPS encourage me and make me feel I can succeed in my work	**Teacher Support**	.792	0.32	0.95	1.58
		.289	31	My teachers expect all students in TOPS to do their best			0.29	0.87	1.45
		.250	34	I feel I can join in any of the activities in TOPS if I want			0.25	0.75	1.25
		.193	26	My teachers make me feel welcome			0.19	0.58	0.96
		.159	32	I feel good about the way my teachers treat students in TOPS			0.16	0.48	0.8
		.181	28	My parents feel TOPS is a good program			0.18	0.54	0.9
							0.23	0.69	1.16
4	1.95	.414	20	I learned a lot in homeroom this year	**Self-Esteem**	.726	0.41	1.24	2.07
		.275	36	I have gained confidence in my ability to do school work this year	**High**		0.28	0.83	1.38
		.348	33	Many of my friends in TOPS have customs and cultures different from mine			0.35	1.05	1.74
		.176	24	I have made lots of new friends this year			0.18	0.53	0.88
							0.3	0.91	1.52
5	1.84	.424	21	I enjoy working in groups	**TOPS/Grouping**	.782	0.42	1.27	2.12
		.390	23	I like having more than one teacher			0.39	1.17	1.95
		.255	22	I like going to different rooms in TOPS			0.25	0.76	1.27
							0.36	1.07	1.78
6	1.68	.466	27	Students respect other students no matter what culture they are	**Multicultural**	.702	0.47	1.4	2.33
		.392	18	I have fun with the other students in my school	**Acceptance**		0.39	1.18	1.96
		.268	30	Students who ride the bus to my school are treated the same as students who do not			0.27	0.81	1.34
							0.38	1.13	1.88
7	1.38	.484	15	I want to be friends with most of the students in TOPS	**TOPS/Social**	.665	0.48	1.45	2.42
		.361	29	I like TOPS			0.36	1.08	1.8
		.257	12	I like to be with the people in TOPS			0.26	0.77	1.28
							0.37	1.1	1.84
8	1.34	.489	14	I often feel left out of things	**Self-Esteem**	.574	0.49	1.47	2.44
		.376	16	The other students in TOPS don't care very much if I come to school every day	**Low**				
9	1.17	.457	5	Sometimes I don't like school					
10	1.04	.347	25	I am a better citizen this year					

Table 2:

Student Survey Constructs by Group

Construct	Subjects	Mean	Std Dev	Cases
* **Peer Relationships**	VEEP	.30	.12	29
	Regular Ed.	.37	.11	26
	GATE	.43	.16	18
* **Positive Attitude Toward School**	VEEP	.50	.30	29
	Regular Ed.	.68	.31	26
	GATE	.68	.31	18
Teacher Support	VEEP	.36	.14	29
	Regular Ed.	.40	.19	26
	GATE	.41	.19	18
Self-Esteem High	VEEP	.44	.19	29
	Regular Ed.	.49	.19	26
	GATE	.57	.30	18
TOPS/ Grouping	VEEP	.72	.47	29
	Regular Ed.	.60	.29	26
	GATE	.81	.41	18
Multicultural Acceptance	VEEP	.67	.34	29
	Regular Ed.	.84	.35	26
	GATE	.91	.41	18
TOPS/ Social	VEEP	.69	.35	29
	Regular Ed.	.56	.24	26
	GATE	.72	.26	18
Self-Esteem Low	VEEP	1.23	.47	29
	Regular Ed.	1.48	.51	26
	GATE	1.30	.54	18
Like School (Neg.)	VEEP	1.34	.70	29
	Regular Ed.	1.18	.75	26
	GATE	.99	.65	18
* **Citizenship**	VEEP	.58	.34	29
	Regular Ed.	.79	.41	26
	GATE	.83	.41	18

* significantly different means (p.<.05)

(Lower mean score indicates more positive response.)

Student/Teacher Interaction

Of more interest is the application of the student constructs in a path model that looks at which attitude "drives" another. Teacher variables were added to this model, and while holding the post CTBS reading score as the dependent outcome, High Self Esteem (factor 4) was found to be the only significant predictor variable in a step-wise regression (F=4.58, p.=.037) and accounted for 8 % of the reading score variance. Holding High Self-Esteem as the dependent outcome, all remaining variables were used in second regression. Four variables--student sense of citizenship, multicultural acceptance, and peer relationships, together with teacher external efficacy (belief that students can learn)--were found to be significant significant predictor variables (F=15.25, p.=.000) and accounted for 69% of the variance in high self-esteem. Further regressions were performed on each of the four variables with all remaining variables. Figure 1 and Table 3 provide the complete model (with Beta loadings) and regression values respectively.

Insert Figure 1 about here

and

Insert Table 3 about here

Figure 1:

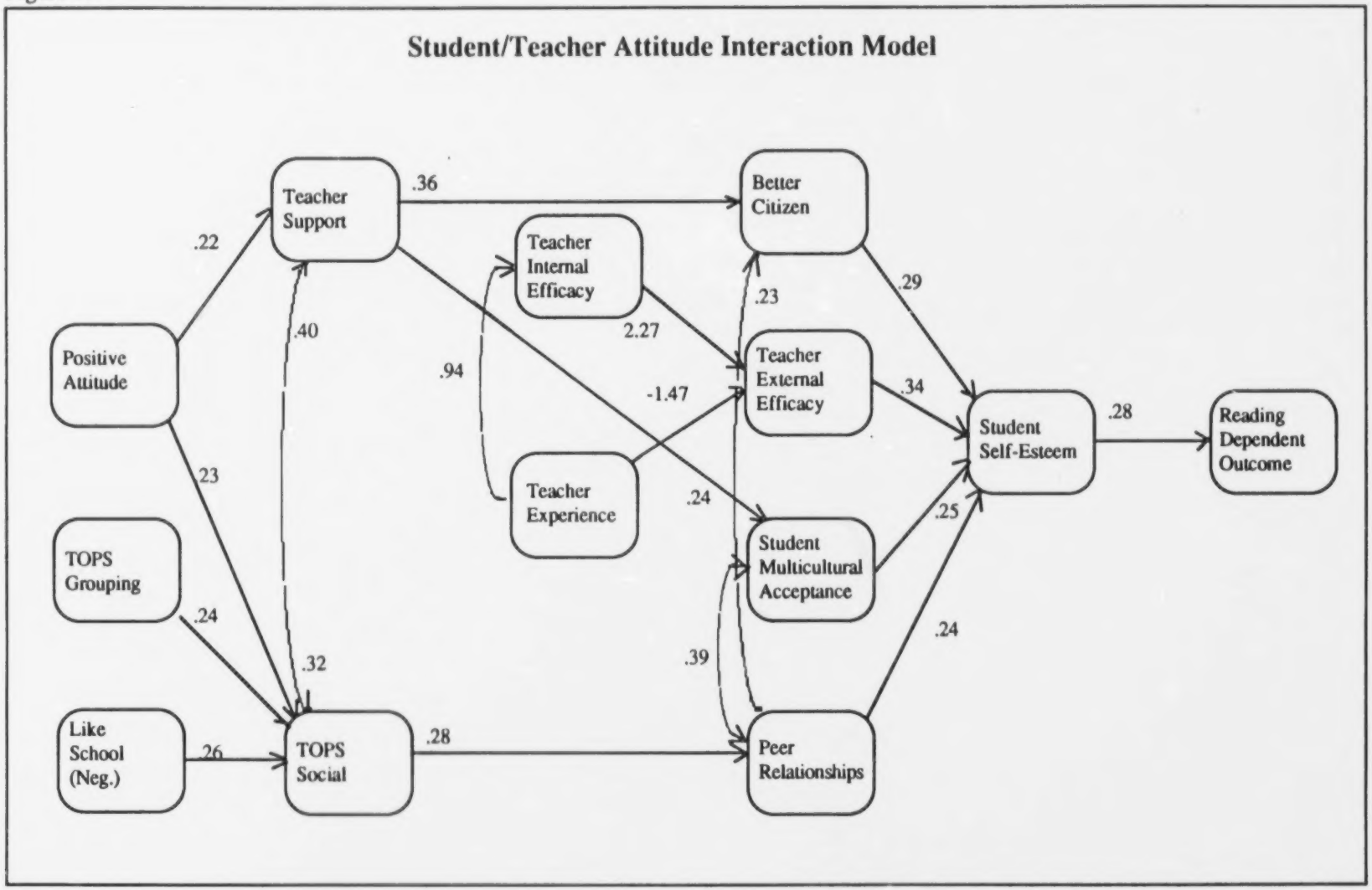

Student/Teacher Attitude Interaction Model
Positive Attitude
TOPS Grouping
Like School (Neg.)
Teacher Support
TOPS Social
Teacher Internal Efficacy
Teacher Experience
Teacher External Efficacy
Better Citizen
Student Multicultural Acceptance
Peer Relationships
Student Self-Esteem
Reading Dependent Outcome
.22
.23
.24
.26
.40
.32
.36
.94
2.27
-1.47
.24
.23
.39
.29
.34
.25
.24
.28
.28

Table 3

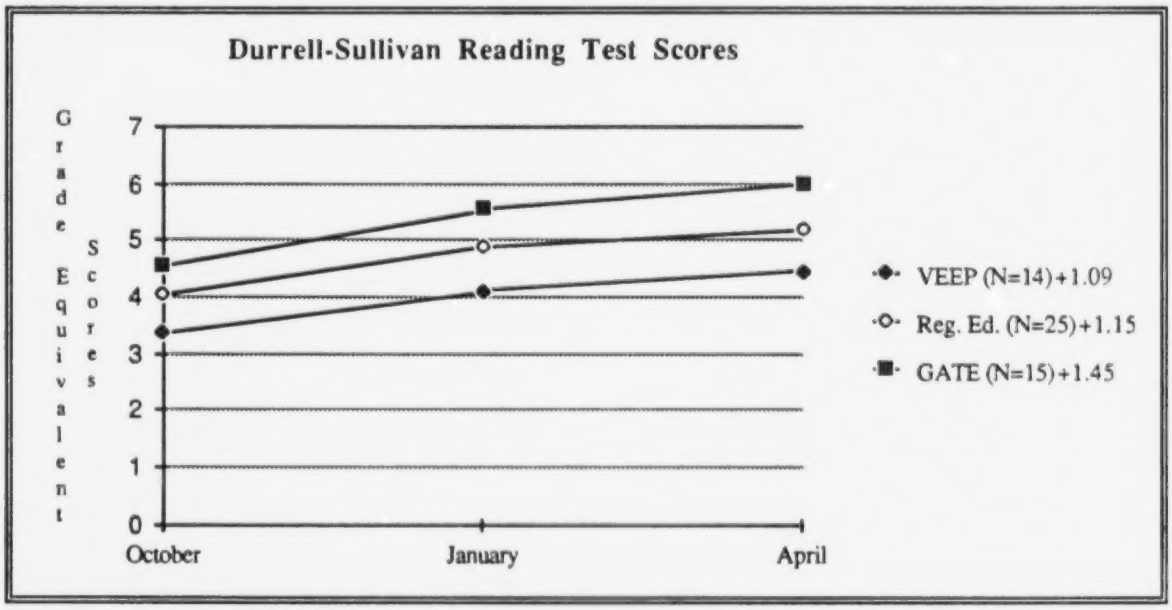
Student/Teacher Attitude Interaction Model

Dependent Variable	Regression Values	
	F Value	R Square
Reading	4.58, p.=.037	.08
Student Self-Esteem	15.25, p.=.000	.69
Better Citizen	10.89, p.=.000	.49
Student Multicultural Acceptance	13.05, p.=.000	.52
Peer Relationships	14.30, p.=.000	.54
Teacher Support	12.98, p.=000	.52
TOPS Social	10.41, p.=000	.62

Reading Outcomes

Students were tested three times over the school year. As these students are third and fourth grade students, a 3.5 grade equivalent might be an expected beginning mean. In fact, the beginning VEEP mean is just below 3.5, the regular education group started at about 4.0, and the Gate group started at just above 4.5. Figure 2 shows the growth curve for all three groups. This growth profile represents what economists refer to as a "Pareto improvement": that is, all group mean gains show greater than one year of growth benefit from the program.

Figure 2:



A remaining question is what might these students have done had they not been in the program? To address this question, CTBS reading scores for the previous and study years were analyzed. Control VEEP and GATE students were randomly selected from other district schools, and were also included in the analysis. Table 4 presents a summary of these data. Study GATE students maintained their mean while the control GATE group fell 13 points. VEEP study students gained 5 points while the control VEEP group fell 3 points. Analysis of Co-Variance between experimental groups shows this pre to post gain is significant.

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Insert Table 4 about here

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Table 4: CTBS Reading Pre/Post Analysis

Group	N	Mean	S. D.		Mean	S. D.
VEEP:						
Experimental	21	33.2	23.0	*	38.0	17.0
Control	13	48.6	17.1		45.4	17.1
REG ED:						
Experimental	23	61.1	22.2	*	61.1	19.7
Control		-	-		-	-
GATE:						
Experimental	15	71.2	26.1	*	71.6	16.2
Control	17	80.8	13.7		67.1	18.9

* ANCOVA Main Effects (F(2,47)=3.73, p.=.032)

Discussion

Glassman's (1988) comparison of students who were Black, Hispanic and Anglo, which revealed positive gains for Hispanic students in the cooperative learning group in the study, is supported by the findings of this study: the VEEP students (mostly Hispanic, Limited English Proficient) showed significantly greater gains. As suggested by Armor (Armor, et al, 1976), Berman & McLaughlin (1977), Ashton (1983), Huston (1989) this was accomplished, at least in part, through the teachers' sense of efficacy.

Also supported by this study are the findings by Foreman and Cazden (1985) and Slavin (1988) regarding the positive effect of within-class, cooperative learning programs.

The teachers, empowered through the restructuring process, made a programmatic decision to implement a cooperative learning approach. This research-based decision led to a team-teaching attitude, which enhanced their internal efficacy. Through the path model presented, this enhanced efficacy (together with the effects of both the program itself and enhanced student attitudes) resulted in greater learning for all students.

Recommendations

1. Continue the TOPS program and extend it to the upper grades.

2. Replicate the student/teacher interaction model portion of this study with a larger sample. Add pre-test measures of attitudes.

3. Reassess district policy which enables resegregation of students voluntarily bussed predominantly White schools.

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